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Governmental Complexity in the Swiss Alps

Planning Structures Relevant to a World Natural Heritage Site

Jöri Hoppler, Astrid Wallner and Urs Wiesmann

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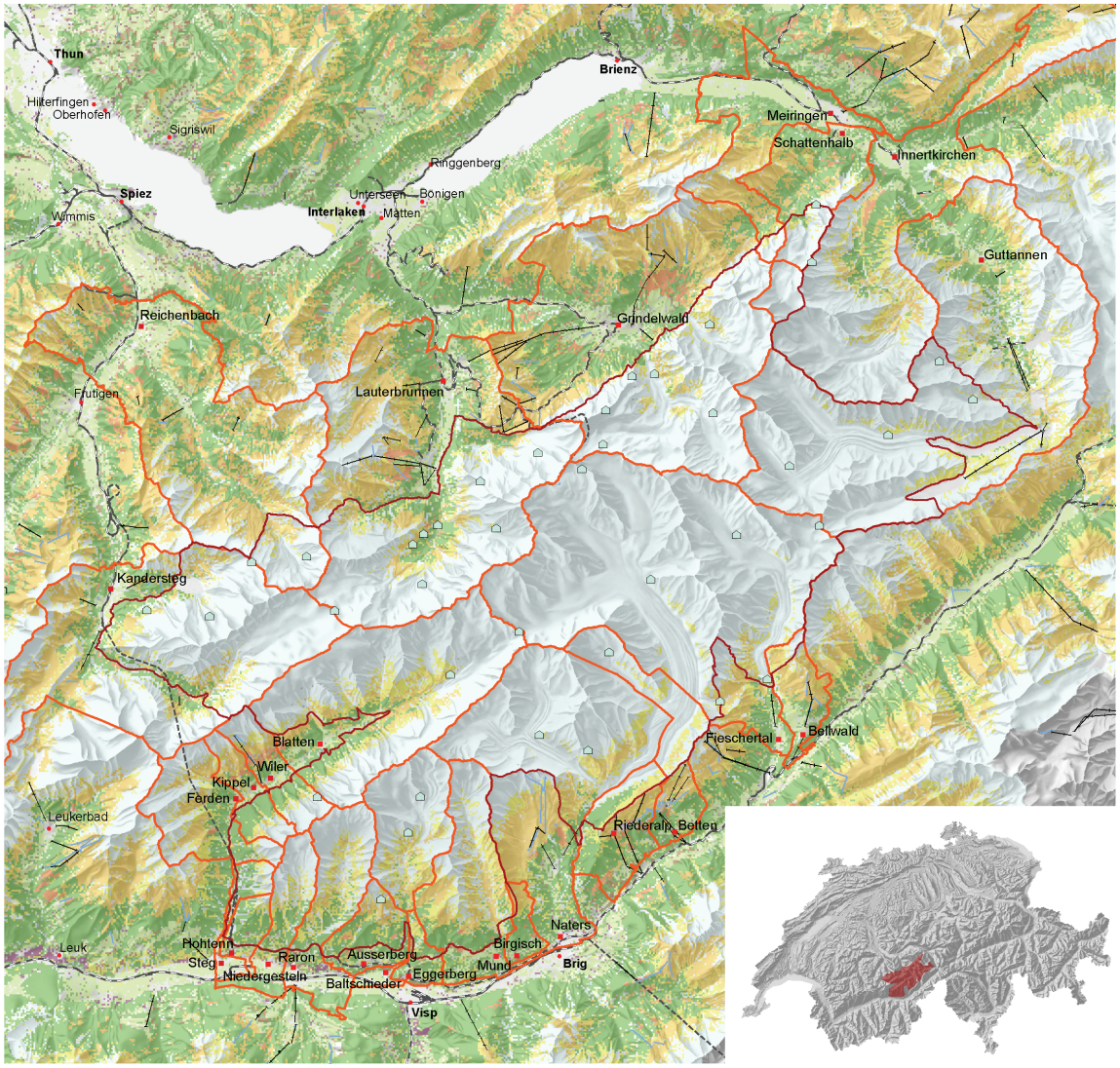
1 Introduction and Background

This paper is based on the results of a master's thesis written during 2006 and 2007 (Hoppler & Strässle 2007). The study investigated the planning tools of the institutional framework encompassing the Jungfrau-Aletsch-Bietschhorn World Natural Heritage Site in Switzerland. Due to the highly developed Swiss federal system, a multitude of administrative units are concerned in the Site management, including conservation practices as well as sustainable use. Based on the study's results certain crucial interrelations were identified and additionally examined in two case studies.

In 2001 the Jungfrau-Aletsch-Bietschhorn region was inscribed on the World Heritage List of the UNESCO World Heritage Committee as the first World Natural Heritage Site in the Swiss Alps. This inscription was awarded on the basis of three criteria: "(1) The importance of the high-mountain region and its glaciation as a source of geological data and a witness to climate change; (2) The importance of the region as a dynamic (due to glacier fluctuations) alpine and sub-alpine habitat rich in diversity; (3) The extraordinary scenic and aesthetic appeal of the region, which has frequently been attested to throughout cultural history" (WHS Association 2005).

The actual perimeter of the World Heritage Site (WHS) covers 824 km^2 (including an extension approved in 2007) and concentrates on the uninhabited high alpine zone (Figure 1). The WHS mainly consists of natural landscapes, with 80% of the area covered by glaciers and non-vegetated rocks, 8% by unproductive vegetation, and 6% by alpine forests, whereas only about 5% of the area is covered by alpine vegetation serving as mountain pastures. The WHS straddles the border of the two Swiss cantons of Berne and Valais. The Bernese part to the north is characterized by steep mountain slopes and includes the well-known peaks of Eiger, Mönch, and Jungfrau (4158 m), as well as the Jungfraujoch (3471 m), with the highest railway station in Europe, built in the early 20th century. A world-famous tourist attraction and departure point for ski tours, glacier treks, and mountaineering expeditions, the Jungfraujoch is also the only technically developed access point to the WHS. The Valaisian part of the WHS to the south is less steep and mainly dominated by extended glaciers and remote valleys that have largely maintained their original character and are, for the most part, untouched by the main tourist streams (Wiesmann et al. 2005).

Due to its transboundary position (straddling the border between two cantons), the WHS is related to two major hubs of regional economic development: the highly developed tourist region in the eastern Bernese Oberland to the north, and the upper part of the main valley of Valais to the south, where remote traditional agriculture was superseded by industrial and tourism development during the second half of the 20th Century. This situation is reflected in the territories of the communes (local administrative unit comprising one or several villages) containing a share of the WHS: their core settlements and socioeconomic activities are located in the valley bottoms north and south of the High Alps, whereas the perimeter of the WHS covers only the remote periphery.



Infrastructure, Land Cover and Land Use

Infrastructure

- Railway
- Cable Car
- Ski lift
- Swiss Alpine Club hut / mountain lodge

Legend detail

- Centre of associated commune with land inside the perimeter
- Centre of commune with more than 2,000 inhabitants
- Perimeter of the World Heritage Site (including extension of 06.2007)
- Border of associated commune

Land Cover and Use 1992/97 (100 m grids)

- Forest
- Vineyards and orchards
- Arable land and meadows
- Home pasture
- Alpine meadows
- Alpine pastures
- Unproductive vegetation
- No vegetation

Sources of data:
National borders, lakes, commune borders: GG25 © 2002
Swiss Federal Office of Topography (DV002213)
Main centres in communes: SWISSNAMES © 2004
Swiss Federal Office of Topography (DV012687)
Perimeter of the World Heritage Site 2005
Swiss Agency for the Environment, Forests and Landscape
Relief: PK100 © 1998 and PK500 © 1999
Swiss Federal Office of Topography (DV 351.4)
Land use data: 1992/97, FOS GEOSTAT
Infrastructure: VECTOR 25 © 2004
Swiss Federal Office of Topography (DV002232)

Digital map data PM100, reproduced by permission of swisstopo (BA081638)

Map compilation and cartography:
CDE (Centre for Development and Environment), Institute of Geography, University of Berne,
in cooperation with the Jungfrau-Aletsch-Bietschhorn World Heritage Site Association, Interlaken and Naters, 09.2007

N
0 5 10km

Figure 1: Infrastructure, land cover and land use around the World Heritage Site. [Source: adapted from WHS Association 2005 (Land cover and land use) and Wallner et al. 2007 (Infrastructures)]

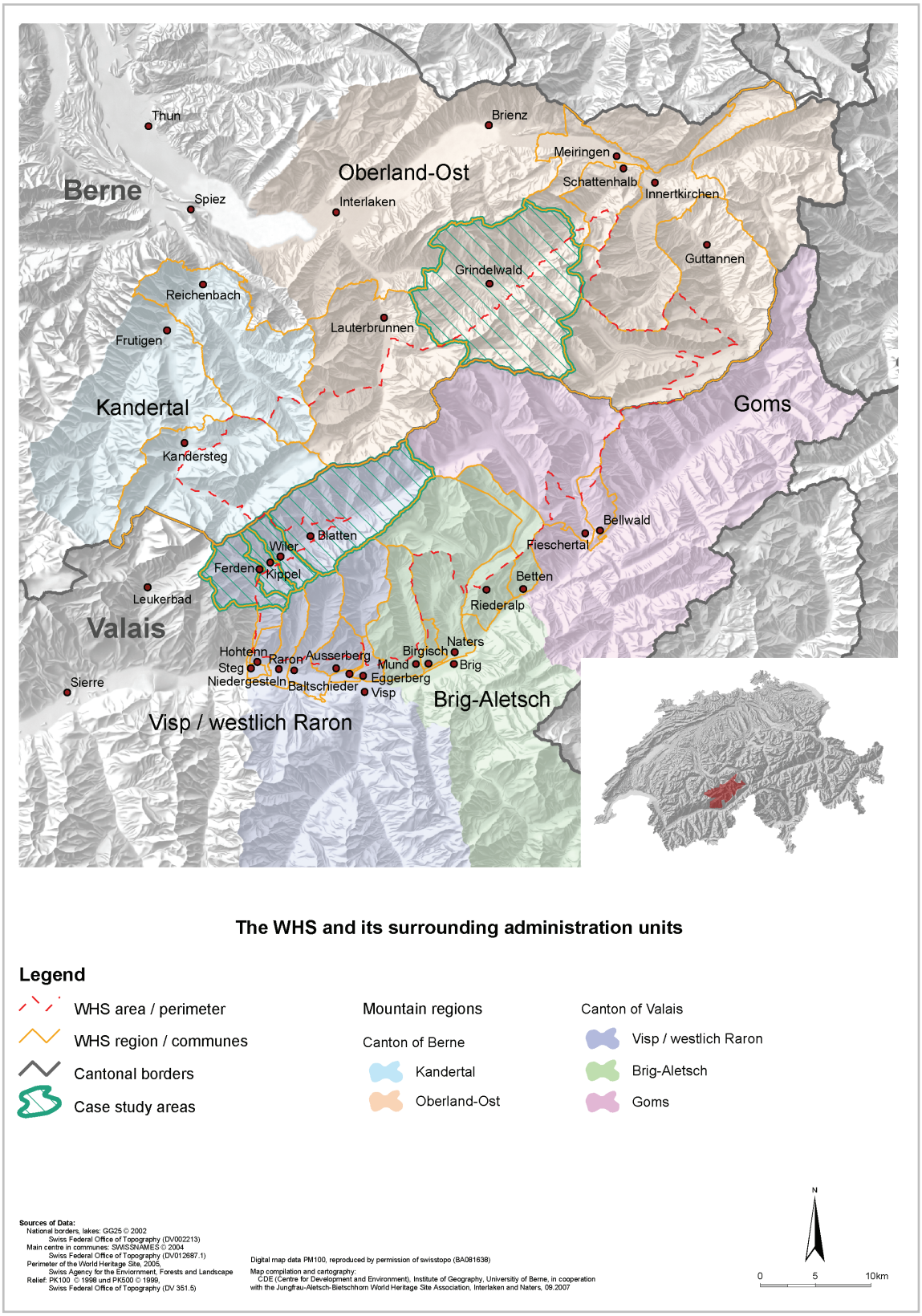


Figure 2: The World Heritage Site embedded in its institutional framework. (Source: adapted from Hoppler & Strässle 2007)

of these political units. Therefore, the overall region of the WHS extends beyond the perimeter of the WHS to include the communes whose territories contain shares of the Alpine World Heritage Site. This region of the WHS covers 1629 km^2 and is home to 35,000 inhabitants (Wiesmann et al. 2005).

The contrast between the high proportion of unproductive vegetation and vegetation-free areas in the WHS (88%) and the surrounding traditional cultural landscapes are a fundamental reason for the touristic attractiveness of the WHS region. A major part of the economy in the region of the WHS is directly or indirectly linked to tourism. Given the ongoing dramatic changes in the agricultural sector, the risk facing the cultural landscapes must be assessed as greater than that facing the natural landscapes inside the perimeter of the WHS. Recognising these factors, the WHS Association decided not only to preserve the WHS but also to achieve sustainable development in the entire region covered by the associated communes.

Based on international scientific debates on involving people and linking conservation goals to development issues, the local WHS Management Centre in 2003 launched an extensive participatory process in order to negotiate and prioritise overall goals, specific objectives, necessary measures, and concrete projects for the region (Wiesmann et al. 2005). The results served as a "core input" for the subsequently elaborated WHS management strategy and plan. "It represents a working instrument for use in further resolving conflicts and interests and in promoting creative, innovative projects and initiatives" in the region of the WHS (WHS Association 2005). Even though several governmental actors were involved in this participatory process, the WHS management strategy is not legally binding upon them. This is important when looking at the highly complex institutional framework of the WHS: The Swiss Confederation, 2 cantons, and not less than 26 communes are involved (Figure 2). Most of them have their own planning tools and strategies.

1.1 Aim of the study and methodology

The aim of the master's thesis was to examine the existing governmental planning tools and structures concerned with the objectives and measures of the WHS management strategy. The synergies and differences were elaborated in order to evaluate the impact on the region of the WHS. Looking at the complex institutional framework, regional cooperation between the various actors became an important subject too. Hence the following research questions were formulated: (1) Does the WHS play a role in the planning tools? (2) Are there objectives or measures already taken into account by the planning strategies? (3) Are the planning strategies compatible with the WHS management strategy? (4) Is there cooperation between planning actors focusing on the WHS?

The study was based on qualitative methods. On the basis of the WHS management strategy and plan, a system of categories was developed corresponding to the different objectives and measures. These categories allowed for examination of a large quantity of planning documents by means of content analysis. In a first step, an inventory of all

planning tools concerning the region of the WHS was made. These documents then were analysed and significant sections or paragraphs were gathered in an analytical table. In a second step, the resulting table was exploited and split up according to the target areas of the WHS management strategy and plan (see 1.2). Because of the unequally distributed number of communes sharing the WHS, the Valaisian communes examined were restricted to a selection of 7 units (Fieschertal; Betten; Riederalp; Naters; Mund; Niedergesteln; and Wiler/Lötschental).

Based on the results of the master's thesis (presented in the second part of this paper) two additional case studies were elaborated for the third part of this paper. Certain interrelations assessed as crucial were examined by means of two interviews in two different valleys sharing the WHS. The interviews were complemented by materials collected over the period of the main study and by supplementary local documents. In order not to anticipate the results the actors interviewed, this will be introduced at the beginning of the third part. The last part of the paper presents the conclusions of both the master's thesis and the case studies.

1.2 The World Heritage Site management strategy and plan

As mentioned above, the WHS management strategy and plan are the result of a broadly based process of negotiation which involved the affected stakeholders (segments of the population, business community, public and other interested organisations). Given the extensive field of interests, it was not possible, nor was it the aim, to formulate "systematic, self-contained" objectives but "to draw up a comprehensive list of objectives that address the needs, wishes and visions of affected or involved sectors of the population and stakeholder groups" (WHS Association 2005).

Box: The six overall goals underlying the World Heritage Site management strategy and plan

The overall goals apply above all to the area inside the perimeter (= World Heritage Site); however, they should be taken into consideration throughout the entire World Heritage Region.

1. The diversity, individual character and beauty of the World Heritage Site and the variety of natural and near-natural ecosystems and ecosystem complexes are to be preserved for current and future generations. Moderate and sustainable economic, cultural and recreational use and development is to be brought in line with this goal.
2. All species of wild fauna and flora native to the region, along with their biological communities, are to be conserved in populations viable in the long term, and are to be nurtured or utilised if necessary. Natural developments must be allowed to take their course whenever possible.
3. The various natural and cultural landscapes, together with their traditional cultural features, are to be preserved as far as possible, or developed with care.
4. Economic use is to be guided by market conditions, the social and cultural situation, and legal regulations, but also by the long-term carrying capacity of the natural systems as outlined in overall goals 1-3.
5. Man is welcome in the World Heritage Site as a visitor, actor and user who is mindful of the risks of natural hazards and pays due regard to the sensitivity and need for protection of the natural resources. Appropriate infrastructure is to be maintained and, if necessary, expanded in line with the capacity of the natural systems to tolerate use.
6. Local inhabitants and visitors are to be informed in a competent fashion and made aware of the value, uniqueness and beauty of the World Heritage Site. The resulting awareness will motivate them to interact with and experience the Site, and will provide a necessary basis for long-term preservation of the value of the Site.

The management strategy and plan are based on six overall goals. Three of them support the aim of preserving the integrity of the diversity and uniqueness of the natural and cultural landscapes, the natural and quasi-natural ecosystems, and the flora and fauna. The focus is on a dynamic rather than a static approach to conservation, which incorporates natural change as well as human-induced developments. The other three overall goals aim to ensure appropriate economic and social use of the region, and stress the importance of awareness-raising and communication (see Box above).

The overall goals were refined in 69 objectives in 8 individual target areas, as there are natural and cultural landscapes (5 objectives); flora and fauna (3 objectives); agriculture and forestry (14 objectives); hunting and fishing (5 objectives); industry, trade and commerce (8 objectives); energy and transport (12 objectives); tourism and visitor management (12 objectives); and culture, education, information and research (10 objectives). All these objectives and the resulting measures were then bundled into thematic fields and so-called project lines. Since 2005 several core groups have been engaged in concretising creative and innovative projects based on the management strategy (see WHS Association 2007).

1.3 Governmental administration structures and planning strategies for the World Heritage Site

In Switzerland, democratic traditions resulted in a high number of administrative units. In particular, the fact that the Swiss state is a confederation led to a complex structure consisting of different levels of decision-making. The three basic levels are the confederation, the cantons (provinces) and the communes. The WHS area is shared by two cantons: Berne in the north and Valais in the south. Traditionally there are more small-sized communes in the Valais than in Berne. Thus 18 Valaisian and 8 Bernese communes are involved in the WHS (see Figure 2 above).

The principle of subsidiarity is very important in this highly decentralised system. Thus each task should be performed at the lowest possible level. Applied to planning processes this means that the Swiss Confederation focuses on planning related to national interests, such as energy and transport. Furthermore, the primary sector is managed, protected and controlled strictly at the national level, as in most of industrialised countries. The region of the WHS is greatly affected by national policies in this sector. Another sector affected by national decisions is aviation. Due to the army airport in Meiringen and several heliskiing airfields in and around the WHS area, this is a controversial subject.

At the lowest level the communes are responsible for their territories. They have to work closely with all stakeholders and to arrange different interests and claims. As the most effective means to this end, they work out zone use plans and building regulations. There are fixed agricultural zones and built-up areas for human needs such as living and working. Nature conservation may be regulated by protected areas too. Zone use plans are binding on landowners, and stipulate what the land can be used for and where and to what extent it can be used. Usually this coordination task is carried out by the communal building authorities. They thereby have to satisfy national and cantonal laws

and regulations. There is more or less tolerance for own instructions, depending on the subject at hand and on cantonal legislation.

In accordance with the Swiss land use planning law, all cantons have to work out cantonal structural plans in which they define the main cantonal interests in spatial planning. Such plans are binding on the authorities and should coordinate land use planning at federal, cantonal and communal levels. These tools may vary in structure, content and basic strategy, as it is the case around the region of the WHS. On the one hand the Valaisian structure plan is confined to coordinating the hot spots of cantonal interest. It is a collection of renewable "sheets of coordination" where the subjects are defined and may be adapted. On the other hand the Bernese structure plan is based on a "centralised structure" which defines the main places of economic and social development and draws the most important connection axis between them. Population and economic growth should be concentrated in this network. The strategic part of this concept integrates all relevant spatial activities from other sectoral policies such as energy, transport and the economy. All subsequent measures listed in the Bernese structural plan are prioritised based on this strategy.

While spatial planning plays a very important role in coordinating, other sectoral policies affect the WHS as well. In particular regional economic policy is a concern in rural mountain areas. In 1974 the Swiss Confederation undertook a broad range of activities, enacting an investment assistance law for mountain regions. The entire area of the Swiss Alps was divided into "mountain regions" which could apply for governmental subsidies based on "regional development concepts" they had to prepare first. There are 5 such regions in the vicinity of the WHS: Goms, Brig-Aletsch and Visp/westlich Raron in the Valais; Oberland-Ost and Kandertal in Berne (see Figure 2 above). In terms of economic and social investment, they still play a key role in the region of the WHS. In recent decades, Berne additionally strengthened their impact, delegating more and more tasks to the regional level, e.g. land management and snow-making concepts.

Generally the canton of Valais delegates many tasks directly to the communes, while Berne uses the mountain regions as connectors between the two levels. This happens most obviously in relation to nature conservation. Valaisian legislation is highly defensive in designating landscape reserves and delegates this responsibility to the communes. However, around 1985, the Bernese regions had to elaborate a first generation of land management plans which still underlies current protection discussions. Furthermore, there is a certain scope for the cantons in ecological agriculture policies. By preparing "regional concepts of ecological integration" it is possible to generate more federal subsidies for farmers. The Bernese regions quickly worked out adequate concepts with cantonal support. The canton of Valais explicitly waited for local farmer initiatives and up to now only a few corresponding concepts have been elaborated in the region of the WHS.

In the thematic area of WHS management strategy, various departments and offices are concerned at the different levels. The primary sector (agriculture and forestry) has its own offices at national and cantonal levels. Also spatial planning, nature conservation,

and the energy and the transport sectors are managed by their own offices. Tourism and regional policy are shared by different offices in the departments of economy. At communal level, the building authorities are the most substantial. Semi-public organisations exist collaterally, especially in the economy and tourism sectors (Figure 3).

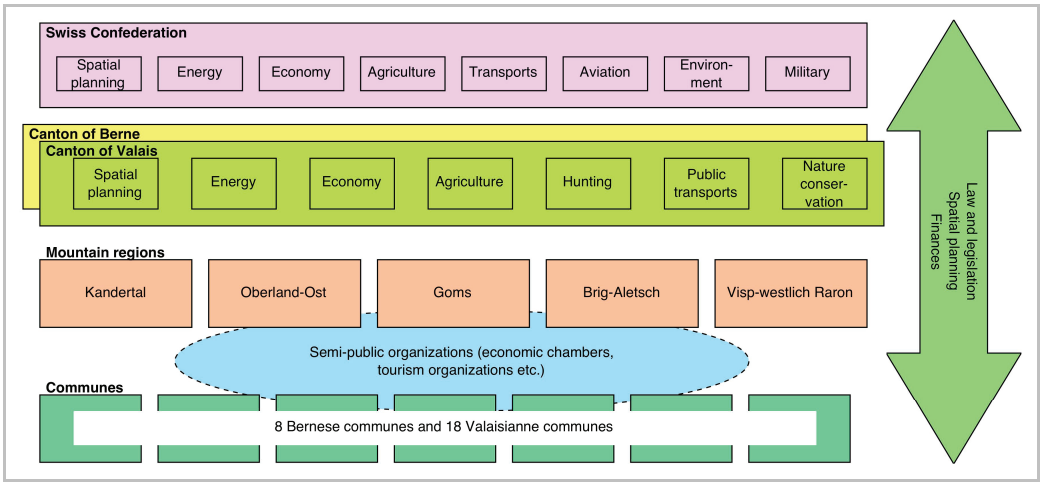


Figure 3: Public authorities involved in the region of the World Heritage Site. (Source: adapted from Hoppler & Strässle 2007)

2 Synergies and Differences

In examining all planning tools concerning WHS, synergies and differences with the WHS management strategy and plan can be discerned. The results presented in this section are based on a master's thesis written 2006 and 2007 (see Hoppler & Strässle 2007).

2.1 Nature and environmental protection

In the 1970s the Swiss Confederation began a broad inventory of different types of outstanding landscapes and habitats such as alluvial zones, mire landscapes, breeding areas, amphibian spawning areas, etc. The core area of the WHS at this time (in 1983) was already declared a high alpine zone of national importance and inscribed in the Federal Inventory of Landscapes and Natural Monuments of National Importance (BLN). Thus this major part of the WHS (94.4%) is protected by the Federal Law on the Protection of Nature and Cultural Heritage (NHG). Under the terms of Art. 6, the goal of unrestricted preservation, or the greatest possible conservation of the BLN-objects, must be achieved. However, this act is only legally binding on the authorities fulfilling national tasks but not when fulfilling cantonal and communal tasks – unless these are federal tasks to be fulfilled in a subsidiary capacity by cantons or communes (WHS Association 2005).

The best protection is given in areas concerned by the so-called Ordinance Concerning Compensation for Losses in Hydropower Generation (VAEW). These areas are preserved very strictly by contracts whereby the communes and cantons refrain from using hydropower and obligate themselves to implement the restrictions in the zone use plans binding on landowners in order to get financial compensation from the Confederation. All interventions which might impair the value of the landscape are forbidden. A VAEW area is situated on the southern slopes around the Bietschhorn inside the WHS perimeter.

Most of the protected areas in the WHS are provided for by federal legislation, which issues instructions and assigns implementation to the cantonal legislations. The strictness of protection prescriptions varies among the different types. Mire landscapes are protected strictly by prohibition of changes which affect the landscape. Alluvial zones, glacier forelands, raised bogs, transitional mires, and fenlands are provided primarily for preserving habitats and natural ecosystems. If necessary, adequate land use is required. Special habitats are protected by amphibian spawning areas in the same way. More large-sized areas like the VAEW area are federal hunting reserves where hunting is totally banned and tourist activities that disturb animals, such as camping and skiing away from the prepared runs, are restricted. Driving agricultural and forestry vehicles is only allowed on existing tracks.

The cantons are bound to adapt their legislation accordingly. It is their role to control and implement the actions needed, possibly in collaboration with the communes. Furthermore, they are free to declare their own additional protected areas. In order to

achieve the management strategy objective of conserving "all species of wild flora and fauna native to the region, along with their biological communities, [...] in populations viable in the long term", and nurturing or utilising them "if necessary," the cantonal protection laws and practices are essential.

Looking at both involved cantons, there are several differences. Valaisian protection implementation is based on the cantonal law on the protection of nature and cultural heritage, the land use planning law, and the building law. Their intention to conserve endemic species of flora and fauna and their natural habitats corresponds to the management strategy and plan. But they delegate the implementation task further to the next lower level, the communes, and cantonal activities concentrate on just a few areas. Hence compared to Berne, in the Valais there are some small cantonal protected areas. One area (Märjelensee in Fieschertal) is officially not even accepted by the communal zone use plan, although it lies within the BLN area.

Thus the Valaisian communes basically account for nature and environmental protection but the analysis of the communal zone use plans showed inconsistent implementation. Some communes revealed several activities: Niedergesteln declared an additional extended part outside of the WHS perimeter as a protected area, and Naters is promoting land management projects such as reconstructing dry stone walls, tracks, and hedges, etc. Given the fact that cultural landscapes are more endangered than natural landscapes in the region of the WHS (see Figure 1 above), such land management efforts are very important. Based on the Valaisian structural plan, important traditional landscapes such as hedges, meadows, and traditional irrigation canals were listed (*suonen*). Be-cause of the dry slopes on the southern side of the WHS, these *suonen* are essential for the irrigation system. Traditionally they were unbolted canals but during the last decades they have been displaced by pipes. The cantonal intention is to keep them open or to uncover them. Whether all these objects are preserved effectively should be the subject of an investigation.

On the Bernese side, protection implementation is also based on the cantonal law on the protection of nature, the land use planning law, and the building law, whose goals correspond to the management strategy and plan. Additionally, the canton of Berne announced a Cantonal Concept of Land Management in 1998. Its aim is the coordination of all interests in protection and use of landscape. Given the high percentage of BLN within the WHS area, the terms are of particular importance, which make the areas of BLN, mire landscapes and the federal hunting reserves legal and binding for all cantonal and communal authorities. In general, the Bernese administration is more active in protection projects than the Valaisian. There are three extended cantonal protected areas in the WHS where the Bernese nature conservation agency concludes agreements with the landowners. Already in the mid-eighties, the canton demanded regional landscape plans, where more or less important protected areas and landscapes should be indicated as a basis for cantonal and communal planning. Furthermore, the Bernese building law prescribes communal zone use plans including entire communal areas, usually named in protection plans. However, only four of eight Bernese com-

munes involved in the WHS have the required concepts available. The example of Grindelwald, which is the most detailed, will be discussed in the case studies.

Bernese collaboration with mountain regions is well developed and concerns nature conservation and land management as well. The region of Oberland-Ost even elaborated a land management concept in order to coordinate all actors affected by landscape such as agriculture, forestry, tourism, hydropower and conservationists. At the same time, a regional fund has been raised to promote projects maintaining the regional landscape and a "landscape agent" has been engaged to support interested actors. Additionally, all Bernese regions have regional concepts of ecological integration (see 2.2). Based on this regional understanding of coordination in the canton of Berne, regional forest plans were worked out too. Among other forest use purposes, forest reserves have been declared. There are about 14 areas of total or partial preservation. On this basis the authorities are now negotiating precise agreements with the landowners.

The map showing the national and cantonal protected areas around the WHS (Figure 4, see last page of this paper) makes evident that nearly the whole WHS area is covered by at least one protection type. Only three hilltops in the northern part and some southern slopes in the Lötschental are not subject to restrictions. It has to be recapitulated that the WHS area covers mainly unproductive slopes, rocks and glaciers. The areas more attractive for land use and (mass) tourism are situated around it. Thus it is noticeable that on the Bernese side there are many protected areas even outside of the perimeter covering additional valleys and areas in the region of the WHS, while in the Valais there are not that many. It would be interesting to determine whether there are biological or political reasons for this difference.

2.2 Land use and the primary sector

The primary sector plays a key role in preserving montane landscapes in the region of the WHS. Agriculture, forestry, and hunting regulations may contribute to adequate use and stabilisation of the fragile ecosystems, as the management strategy and plan emphasises. The objectives and measures concerning the primary sector focus on maintaining and encouraging agriculture and forest use, including "related infrastructure (e.g. buildings, access infrastructure)." This fact gains in importance in view of the continuous decline in the number of farmers in Switzerland and hindering conditions, especially for mountain farmers. The management strategy and plan postulates "adequate compensations" and "labelling concepts" to promote regional products. Further-more, land use methods should be sustainable and "guided by the natural yield capacities" (WHS Association 2005).

As in most of the industrialised countries, the primary sector in Switzerland is strictly controlled, regulated and supported by national policies. Since 1992 the strategy has been changed slowly away from price supports for domestic products and other protectionist interventions. Due to pressure from consumers and trading partners like the EU, the prices of dairy sector and export subsidies have been reduced. Therefore, direct payments to farmers have been introduced and were linked gradually to the use of environmental production methods in 1999. The key elements of ecological performance are an appropriate proportion of ecological compensation areas, rational use of fertilisers, crop rotation, soil protection, economic and specific use of plant treatment products, and animal welfare measures (see FOAG 2004).

In terms of particular service, farmers receive additional payments for extensive meadow-land, reed-beds, natural field margins, permanent flowery meadows and rotated fallow fields, hedges, copses and wooded river banks and standard fruit trees (with trunk and crown). This programme of additional ecological direct payments was complemented in 2001 by an ordinance aimed at raising the quality of these ecological zones and encouraging farmers to link them up. To be able to get such supplementary support, a "regional concept of ecological integration" is required.

Thus the Swiss agricultural sector is regulated primarily at the national level. There is little scope left for the lower levels to have an impact on agricultural development. The remaining possibilities lie in the field of regional development. The canton of Berne supported regions in elaborating regional concepts related to the eco-quality ordinance. Hence the regional authorities organise information meetings each spring. Since 2004 Bernese farmers interested in this approach have been able to cultivate their parcels in accordance with these concepts and thus to receive more direct payments. The Valaisian administration demonstrated a more defensive attitude, waiting for initiatives from innovative farmers. Only then would adjacent farmers be persuaded and an integration project launched. As a consequence, in the Valaisian part of the WHS there is just one project and another has been worked out. The endeavours of mountain regions in both cantons to promote projects to strengthen agricultural infrastructure and cooperation are

more integrated. There are agricultural centres which collaborate with the regions and, as mentioned above, Oberland-Ost even engaged a “landscape agent”.

The forests (about 11% of the region of the WHS, but just 3.5% within the perimeter) play an essential role in protecting settlements against avalanches and slides. Hence the management strategy gives the highest priority to the protective function and achieves stable and natural conditions. In 2003 the Swiss Confederation elaborated a new forest programme which emphasises stable protective forests and conservation of biological diversity. After 2008 collaboration involving several communes will be required to receive national subsidies. In Berne regional forest plans already exist but in the Valais just one plan was worked out in the region of Goms as a pilot project. This fact does not imply that protective forests are not important in the Valais. But collaboration has to be strengthened because up to now maintenance of protective forests was organised mainly in communal projects. Also, the declaration of forest reserves to conserve biological diversity is more advanced in the Bernese regions. The Valaisian authorities have to proceed more carefully in persuading landowners not used to regional collaboration. In the region of Oberland-Ost, an association of communes was founded in the 1980s to support protective forests not already maintained by cantonal and federal payments.

Among these financial supports in land use, the management strategy and plan recommends the promotion of regional products. In general, the use of wood as a resource (especially in the energy sector) has increased in recent years in Switzerland. The use of remote mountain forests is thus becoming more profitable. All regional development concepts contain objectives and measures to enhance the use of wood. In the Bernese Oberland a semi-public organisation deals with marketing projects for wood products. In the food sector various local labelling projects and marketing strategies exist. They are mostly organised in small-scaled semi-public organisations. However, the idea of promoting products originating in the region of the WHS through labelling does not exist in the concepts analysed. This omission is certainly rooted in the territories of the administrative units not corresponding to the region of the WHS, and in the fact that the major part of the concepts was worked out before the WHS was established. Thus the creation of a WHS label probably should be a task of the WHS association and. the WHS management centre.

Regarding land use in the region of the WHS, hunting regulations are to be kept in mind even though they are far from having the same importance as agriculture and forestry. The rural and montane area provides habitats for several game animals such as the chamois, the red deer, the alpine ibex, and the roe deer. As a large predator, the lynx was reintroduced in several alpine zones and has also been identified in the region of the WHS. Some wolves and brown bears have been seen again in the Swiss Alps but none of them in the region of the WHS. Hunting regulations are the responsibility of the cantons. They correspond to the management strategy and plan by controlling game populations using hunting sanctuaries and a system of hunting licences. By this means it is possible to avoid extinction or (what in some cases is a more serious problem) oversised populations, which poses a danger to the regeneration of protective forests.

The federal hunting reserves also protect wildlife from human disturbance, particularly in winter (see 2.1). The cantons do not make use of such measures.

2.3 Tourism

A major part of the economy in the region of the WHS is directly or indirectly linked to tourism, which was demonstrated in the analysis of Aerni et al. (2007) on the basis of the percentage of tourism-related sectors such as the hotel and restaurant industry and the retail trade. The building and service industry is closely linked to tourism. The different destinations around the WHS benefit from the landscape's beauty. At the same time, tourism infrastructure such as holiday flats, transport facilities and snow-making equipment, as well as tourist activities like hiking, biking, skiing and adventure sports may threaten the landscape, including natural habitats.

Hence the WHS management strategy and plan postulates a “high-quality, nature-oriented tourism guided by conservation objectives” and “both the need for free access to the World Heritage Site and the needs of natural communities” should be taken into account. Value added and regional cooperation in tourism are to be enhanced as development goals, and agriculture and tourism should be linked as well (e.g. agrotourism, gastronomic cooperation). While inside the perimeter no new transport facilities are to be built, renewals including capacity enhancement are allowed, and outside the perimeter the establishment of “regionally significant” new facilities remains possible (WHS Association 2005).

Tourism seems to be controlled mainly by private actors. The confederation and the cantons affect conditions through their legislation. The main areas of impact are the enhancement of value added, fusion, and cooperation in the sector. The respective Bernese law became effective in 2006 and the Valaisian counterpart is in revision. Tourism taxes are collected and reimbursed to the destinations at a high percentage in order to finance marketing activities. This procedure should encourage cooperation between tourism actors and is a process still getting underway. The achieved tendency will be enforced by the forthcoming federal “new regional policy” which will likewise intensify linkages between actors and sectors.

The concrete implementation of high-quality, nature-oriented tourism remains the responsibility of numerous actors such as transport companies, hotels, restaurants and tourist offices. Regions and communes may influence certain combinations of tourist offerings and regulate sensitive areas by visitor management. For example, hunting and forest reserves restrict human access. In the Valais a project called “LaNaTour” attempted to link agriculture, nature and tourism providing hotels and restaurants with local food products. However, the lack of interested farmers resulted in limited success. An annual “landscape award” by the Oberland-Ost region for innovative farmers sponsored by tourism organisations makes a contribution to enhancing understanding and appreciating the interrelations between tourism and landscape. This award is part of the regional land management strategy.

Transport facilities are important investments for tourism, especially in winter. In 2007 a new law about cable cars was enacted whereby the federal office of transport became the centralised approval authority supervising all proceedings concerning security, building, and environmental instructions. Because of previous cantonal competences related to building and environmental restrictions, the effect of the new law has not yet been assessed. Currently in the Valais, several ideas for new facility projects exist, even though their realisation is uncertain for financial and environmental reasons. There are discussions about new cable cars from Brig to Belalp and Riederalp, as well as intentions to link Leukerbad with the Lötschental. It is certain that around the WHS, transport facilities have been renewed regularly with capacity enhancement. Today, likewise, almost every ski area has snow-making equipment which is consistently upgraded. Artificial snow may have an impact on water supply and nutrient balance. Thus the cantons are responsible for correct implementation through building and environmental laws. Mostly by means of approval proceedings, the details are discussed and arranged by authorities, enterprises, landowners and protectionists.

Due to the importance of tourism in winter and protectionist interests, public discussion about heliskiing is polarised in the region of the WHS. Aviation regulations are enacted by the confederation, which is revising the national aviation concept. While the WHS management strategy and the canton of Berne prefer restrictions, replacements, or the abolition of the seven existing alpine airfields within the WHS area, Valaisian authorities are responsible for their maintenance. The federal office of civil aviation has not yet decided, but it appears to favour the Valaisian position.

There are only a few industrial enterprises around the WHS and some more companies are situated in the centres adjacent to the region of the WHS. However, trade and commerce represent an important source of income in the WHS communes. Therefore, the management strategy achieves the preservation of trade and commerce. In particular, “local products and traditional crafts” should be fostered. Also, employment in the industrial sector should be promoted but the negative impacts on the WHS “are to be reduced as long as this is economically and socially acceptable” (WHS Association 2005).

The cantonal authorities are mainly concerned with spatial development strategies. The Valaisian department of economy in 2006 published a “vision” of spatial development whereby Brig and Visp would become centres of technology situated at the bottom of the Valaisan main valley, overlapping some parts of WHS communes. The Bernese policies are based on the cantonal structural plan and its “structure of centralisation”. Accordingly, two communes within the Bernese part of the region of the WHS will benefit, with increased importance: Meiringen and Reichenbach, with widely opened areas at the bottom of their valleys. Furthermore, there are few measures for fostering trade and commerce in the “regional development concepts”. Regional labels corresponding to the region of the WHS similar to the situation in agriculture and forestry do not exist.

2.4 Infrastructure and settlement

The major part of settlements is concentrated at the bottom of the valleys. However, seasonal settlements at different elevations are important elements of mountain agricultural landscapes. Traditionally, permanent settlements are situated in the valleys while the upper settlements are used only in spring and summer, continually moving livestock at higher altitudes in search of fresh grass. Today this transhumance is still practiced, but the declining agricultural sector and motorisation have contributed to its diminution, so that more and more temporary settlements remain unused. This implies different strategies to make further development possible "undertaken in reasonable proportions," as claimed by the management strategy and plan.

Swiss land use planning policy operates through a clear separation of built-up areas and non-built-up areas. Therefore, the cantons define their strategies, whereby the Valais aims to keep a decentralised structure while Berne is centralising spatial development. This difference may be explained by their topography: on the one hand the Valais consists of a ramified network of valleys and mountain villages situated completely within the Swiss Alps. On the other hand, the canton of Berne has broad areas on the central Swiss plateau where the main part of the population lives and effective transport links facilitate centralisation of economic and socio-economic functions.

Nevertheless, the objectives of federal, cantonal and regional authorities seem to be similar. Economical use of soil is postulated by all of them. In several communes with a high portion of tourism, there are conflicts about the construction of holiday flats. Together with aesthetic problems, a high percentage of occasionally used flats leads to rising infrastructure costs in the communes because the owners pay taxes only at their permanent residences. In recent years there have been heated debates about how to encounter excessive building activities in Lauterbrunnen and Grindelwald. Lauterbrunnen reduced the portion of flats that can be sold to foreigners from 66 to 50% of space in every newly built house. In Grindelwald 35% of space in newly built houses must be used as permanent rather than holiday flats. In order to get a picture of recent building activities in the WHS communes, an analysis of all zone use plans should be done.

Regarding the conservation of cultural landscapes, including temporary settlements, the legal exceptions for non-built areas are determinant. In these areas renewal and construction of new buildings is not allowed. The only exceptions are for agricultural use, but owing to the declining agricultural sector, the maintenance of several cultural landscapes in rural regions is not guaranteed. Thus the federal law offers three legal possibilities for changing the purpose of stables and seasonal accommodations: hamlet zones, zones with scattered buildings, and characteristic buildings in particular types of landscapes. As the responsible authorities, the cantons have to decide on exceptions outside of built-up areas. The canton of Berne is working in the region of the WHS with zones with scattered buildings and several areas of cultural landscapes, where exceptions for characteristic buildings are possible. In zones with scattered buildings changes of use are allowed if permanent habitation of the buildings is ensured. In zones of temporary settlement, the communes may designate cultural landscapes, including characteristic

buildings (see 3.1). In the Valais the communes are allowed to declare special zones between 1000 and 2000 m above sea level where characteristic buildings may be used other than for agriculture (e.g. holiday flats). Currently this communal competence does not correspond to federal regulations on cantonally centralised responsibility for non-built-up areas. But the Valaisian building law was approved inattentively by the federal office; thus the authorities differ about what applies now. The effective impact on increasing holiday flats in non-built-up areas should be explored.

The development of transport structures is linked to cantonal spatial strategies (see above). At the same time, nearly all authorities postulate the enhancement of public transport, as also claimed by the WHS management strategy and plan. The opening of a new tunnel through the Lötschberg, 34.6 km in length, will trigger several changes in the Swiss railway system, also affecting the accessibility of the WHS region. Generally, the Valaisian centres will become closer to Berne; thus Valaisian tourism organisations hope to acquire more customers from all over the central Swiss plateau. On the other hand, several WHS communes adjacent to the previous railway line (Spiez-Frutigen-Kandersteg-Goppenstein-Brig) will lose intercity stops because hereafter all these trains will be directed through the new tunnel. Hence the local railway company and the affected tourism offices (especially the "Region Lötschberg"; see 3.2) started to promote the old line as a tourist attraction which tourists can use to reach beautiful alpine scenery. The trains there will serve more stops than at present.

As shown in the section on tourism, aviation is affecting the WHS by heliskiing. Furthermore, in 2004 the Swiss army decided to move an additional bomber fleet to the military airport in Meiringen. Since then residents, tourist organisations, surrounding communes and the army have debated about the noise, which is not only a source of conflict among residents but also with respect to regional interest in tourism. The communes are in a predicament as a result of two interests: tourism and the economic benefit of the army. A solution has not yet been found. In any event, there are federal plans to place spatial and/or temporal restrictions on flights over the whole country, especially over montane areas, as postulated by the WHS management strategy and plan. However, these projects have not yet proceeded.

As another important sector of infrastructure, energy affects the people in the region of the WHS, both as consumers and producers. The use of hydropower is an essential renewable energy source in the region. One of the largest production sites in Switzerland borders the WHS area in the East and plays a key role as an employer in the Oberhasli. Regarding conflicts with protectionist interests, the WHS management strategy aims at a restriction on established plants and an enhancement of their efficiency. The federal and cantonal policies tend towards the same direction. By means of the Ordinance Concerning Compensation for Losses in Hydropower Generation (VAEW) in the southern part of the WHS, a special way to renounce hydropower and to conserve nature was found (see 2.1).

The second renewable energy form of importance in the region of the WHS consists of the forests whose wood resources will be increasingly used (see 2.2). The Bernese re-

gions operate information centres to support enterprises, communes and private persons in economising their energy use (e.g. by insulation) and changing to renewable resources like wood for heating, or solar-powered installations. These centres may benefit from federal and cantonal energy programmes and subsidies, which exist as much in Berne as in the Valais. However, in the Valaisian regions of the WHS, similar centres were closed due to a lack of demand. There seems to be a cultural difference because on the Bernese side the opposite is happening. Demand is increasing yearly. Nonetheless, Naters in the Valais, an urban commune, achieved the Swiss "Energiestadt" label which is an award for particularly economical energy use. These efforts certainly may contribute to a strengthening of "regional energy cycles," as aimed for by the WHS management strategy and plan, even if they are not referred to literally by the analysed planning documents.

2.5 Summary

Analysis and comparison of the WHS management strategy and plan and the existing governmental planning tools showed many similar intentions. Especially in the primary sector, these are mostly congruent. Since 1999 agricultural policy, dominated by the confederation, has aimed at increasing use of environmental production methods. By means of direct payments, the decline in the agricultural sector has been dealt with, and the task of landscape conservation and maintenance has been compensated in montane regions where topographic and climatic conditions are less profitable. Forestry and hunting regulations likewise are corresponding to the management strategy and plan. Only in organisational and ecological matters does the canton of Berne seem to promote cooperation, as the "regional concepts of ecological integration" and the "regional forest plans" showed.

Also, infrastructure planning includes many objectives that correspond to the management strategy and plan, such as optimising public transport and promoting renewable energy resources. An exception is the problems associated with the military airport in Meiringen. Furthermore, given the structures of traditional settlements in the montane areas, the strict separation of built-up areas and non-built-up areas by the Swiss land use planning law requires several exceptions. Their implementation differs in the cantons sharing the WHS, whereas the effective impact on the landscape should be explored in greater detail.

Protection regulations are usually initiated by federal legislation. The cantons, though, account for protection of the outstanding landscapes and habitats inventoried. While the canton of Berne has several cantonal and regional concepts and regulations, Valaisian legislation delegates implementation almost completely to the communes. Almost the whole area inside the WHS perimeter is covered by at least one type of protected area. Outside, there are more additional protected areas on the Bernese side. However, the effect of implementation depends on the communal restrictions defined in the zone use plans binding on landowners.

The least integrated actors in planning processes are in the economic sector. Indeed, federal and cantonal objectives correspond mostly to the management strategy and plan, but they only account for good conditions. Especially in tourism, as the most important sector of the WHS, regional private actors bear responsibility for high-quality and sustainable activities. For instance, conflicts may emerge when new transport facilities are planned or snow-making equipment is upgraded. On the other hand, some regions try to link tourism and agriculture by land management efforts and shared product offers.

In view of the main tasks of the WHS to preserve the uniqueness of its landscape and to achieve a sustainable development particularly nature conservation, land use and tourism are gaining in importance. While land use is regulated according to the WHS management strategy and plan, and nature conservation mainly seems to be guaranteed, tourism activities are less controlled and may conflict with the achievement of protection goals.

3 Land Management and Tourism – Two Case Studies

Based on the repeatedly obtained result that activities at the communal level are essential for the implementation of many objectives and measures - corresponding to the WHS management strategy and plan as well as to other planning tools - two supplementary case studies were elaborated. They focus on the relation between tourism, land use and land management because of their manifold interrelations and their significance for the preservation of the WHS. On the one hand the beauty of nature is an important resource of tourism as the most important sector of the region of the WHS. On the other hand, tourism actors are less integrated in planning structures than other essential players and may conflict with conservation goals. The latter are the main tasks of the WHS, which also increase worldwide attractiveness for tourists. So there is a balance to be struck between protection and development as achieved by the WHS management strategy and plan. Furthermore, land use in Switzerland is affected by a declining agricultural sector. This process, which is also going on in the region of the WHS, threatens maintenance and preservation of cultural landscapes. As Figure 5 demonstrates, the decline has been enormous. Such long-term changes in economic structures may lead to alterations in socio-cultural values. Depending on the constitution of the other sectors (e.g. tourism or industry), values associated with agriculture and maintenance of an aesthetic landscape may become less important (Messerli 1989).

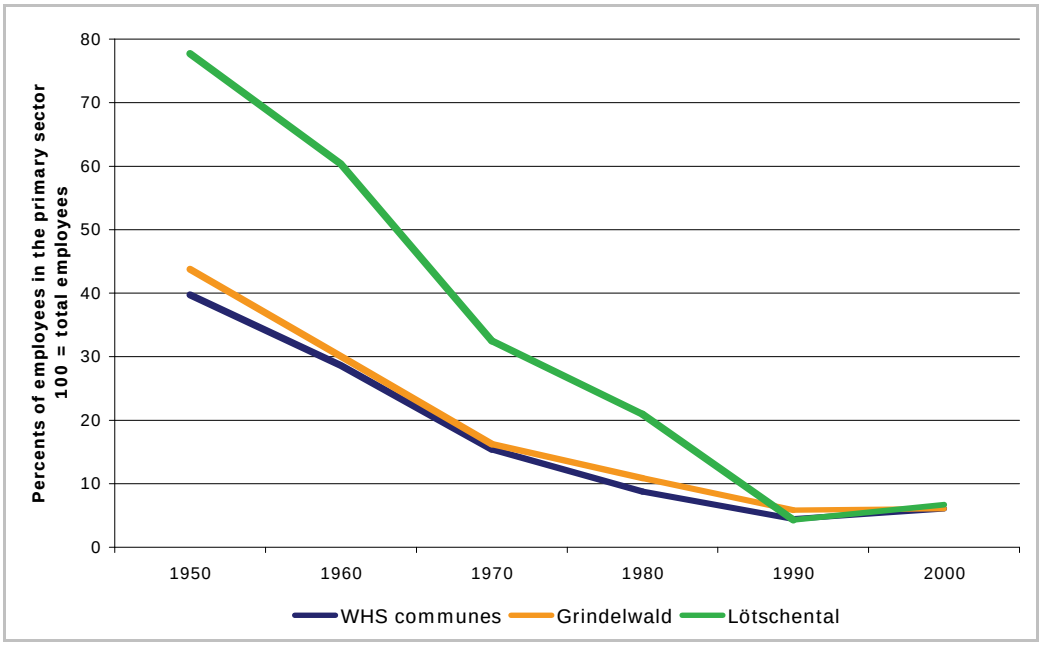


Figure 4: Percentage of employees in the primary sector from 1950 to 2000. [Source: Population census (1950–1980), SFSO 2005 (1990, 2000)]

To reveal these interrelations on the communal level, and especially to estimate the impact of planning activities on the related sectors, two research areas in the vicinity of the WHS were chosen (see Figure 2 above). Firstly, the actors, a commune dealing with protection goals and a tourist organisation promoting several forms of use, were

investigated in order to elucidate various perceptions. Secondly, the two areas belong to the different cantons. Grindelwald is part of the highly developed tourist "Jungfrau Region" region in the north and one of the three WHS communes with the highest population. During the last 15 years, the communal authority worked out a land management plan to coordinate all needs and activities on its territory. The Lötschental, the second research area, is a valley situated in the southwest and shared by four communes (Ferden, Kippel, Wiler and Blatten). It is a less-known tourist destination and, for some decades, the chemical industry has been developing in the centre outside this valley. This industry has become an important employer in the region. Thus Grindelwald is faced with highly developed tourism and needs regulations, while the Lötschental would like to promote tourism and benefit particularly from the international status of the WHS. By means of interviews with one representative of the commune and the tourist organisation respectively, it should be possible to draw a meaningful picture of the activities concerning tourism, land use, land management and the role of the WHS.

3.1 Protection regulation in Grindelwald

The valley of Grindelwald developed as one of the first Alpine tourist resorts, already in the second half of the 19th century. Its attractiveness is based on the striking contrast between the steep, high Alps and their glaciers reaching down to the valley, and the traditional use of the less steep parts of the basin for farming. The village centre is situated at about 1000 m above sea level but the highest mountain is 4107 m. After a breakdown in the First World War – because of the absence of mostly foreign guests – tourism did not fully recover until the 1950s. Since that time mass tourism has developed regularly and today, Grindelwald, together with Lauterbrunnen and Interlaken, belongs to the internationally known "Jungfrau Region".

Figure 5: The Grindelwald basin. (Photo by Jöri Höppler, 2006)

This history is illustrated well by data on economic structure and population (Figure 7). The number of employees in the tertiary sector grew, while the agricultural sector declined, corresponding to the common tendency, and the secondary sector remained at a stable level. It is remarkable that only about 11% of all employees work outside of their domicile (Aerni et al. 2007). The population from 1950 to 2000 shows a major increase of 33%. During tourism seasons in summer and winter, the population of more than 4000 people is complemented by 1000 guest workers and more than 10,000 tourists (Grindelwald 2001). Thus, over the last decades the village centre has been transformed into an urban zone.

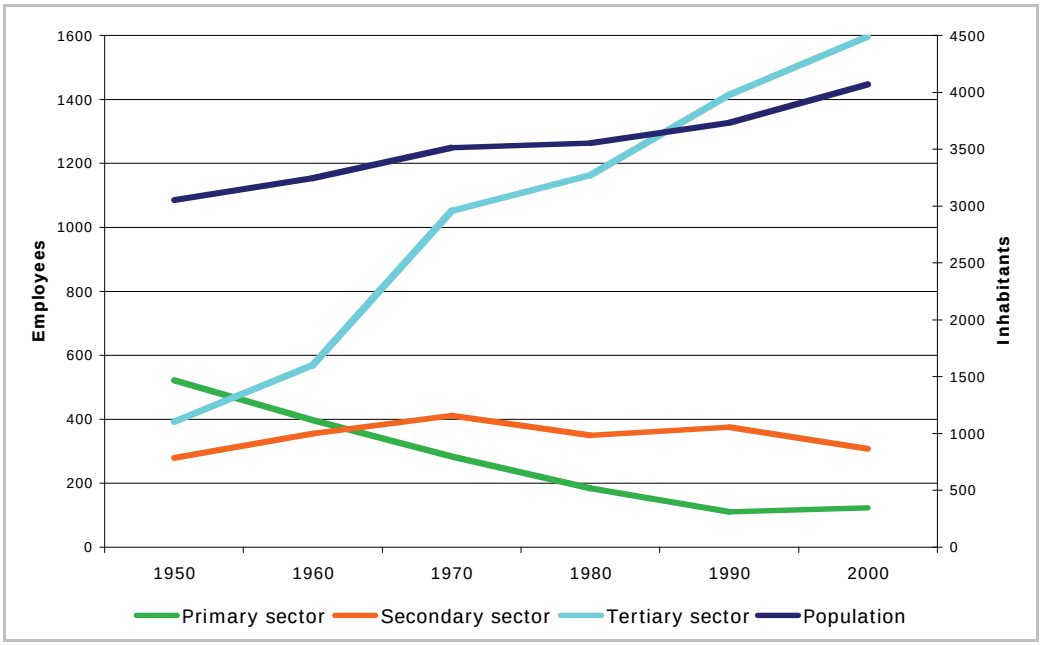


Figure 6: Economic structure and population of Grindelwald. [Source: Employees: Population census (1950–1980), SFSO 2005 (1990, 2000); Population: WHS Association 2005]

During the 1970s and 1980s, the region of Grindelwald was a research region for the transdisciplinary UNESCO programme "Man and Biosphere". Based on this successful collaboration between local people and researchers, the commune formulated policy guidelines "in order to maintain a positive balance between the economic, social, and environmental dimensions of local development based on mass tourism". This "positive balance" still exists due to "close links and interactions between a traditionally-oriented Alpine farming sector and an indigenously-controlled tourist sector" (Wiesmann 1999).

Tourism constitutes the economic basis while agriculture provides the cultural basis. The latter is important for local people to keep their own identity amidst the enormous quantity of tourists. Tourism provides many part-time jobs for farmers so that the two sectors complement each other. But in spatial terms there is great pressure on the flatter slopes in the basin caused by building activities for holiday flats and other tourist infrastructure, although these areas are also the most attractive ones for farming. In the higher areas, visitor management is necessary to avoid conflicts between tourists, wild

animals and plants. The commune identified its landscape as a crucial part of its resources, which allows successful tourism and an economic basis for the inhabitants.

Thus based on the guidelines of 1992, a revision of the communal zone use plan was launched including the elaboration of a protection plan. Due to several difficulties and conflicts, the protection plan was accepted by the cantonal authorities only in 2005, while the revised zone use plan was approved already in 1998. The latter, including the building regulation, defines all restrictions concerning built-up areas. The protection plan consists of a particular regulation, of several maps showing the whole communal area which regulate the non-built-up areas, and of "concept maps" for different kinds of sports like hiking, biking, sledging and transport facilities. To enact such regulations, proceedings consisting of many phases are required. A first draft had to be worked out by the communal authorities in collaboration with all superior levels and local actors affected, such as alpine cooperatives and transport companies. Due to differences in mire protection, many negotiations and on-site inspections were necessary, so that the draft version was published for public participation finally in 1999. In the following second phase, for a period of some weeks inhabitants, companies and local organisations were able to check the proposed regulations and make requests for adaptations. The commune had to examine all suggestions and elaborated a second draft version which then was controlled by the cantonal authorities. After this preliminary test, the regulations were published again and people or organisations still not agreeing were able to raise objections. These objections had to be negotiated, otherwise superior authorities or tribunals would have to decide. In 2001, nine objections were raised and five of them were resolved. In the same year the communal assembly accepted the regulations so that final approval by the canton was the last step. But because of some planned ski pistes, which the canton demanded be cancelled, and due to the remaining objectives, the enacting of the protection plan and regulation required another four years, until 2005.

The main delay in the first phase was caused by federal activities of inventorying alluvial zones, fenlands and mire landscapes. Landowners – especially the alpine cooperatives – and the commune disagreed because these protection objects affected ski areas. There was a long period of negotiation which resulted in a compromise. Two mire landscapes desired by the confederation were reduced (Bachsee and Scheidegg, see Figure 4 above). As compensation, Grindelwald designated the removed parts as communal mire landscape in order to allow some tourist infrastructure within these areas. The second delay after approval by the communal assembly in 2001 was again due to conflicts about ski pistes. There are two alpine cooperatives with a stake in a ski area. But while the one has almost the whole area, the other owns only some marginal segments. In particular, the restaurants, an important source of income in winter, are distributed unequally. The other cooperative wanted to enlarge the ski area that was inscribed in the protection plan. However, the cantonal authorities required the cancellation of this expansion on the basis of designated fenlands, which must not be disturbed by tourists. Furthermore, the second delay resulted from objectives by landowners who did not agree to an enlargement of the local golf course in the beginning.

The final regulation addresses several types of areas and objects affecting the surroundings of the village. There are defined zones for different kinds of use (Table 1): Public use zones are schoolhouses and a waste water treatment plant similar to the zones for sports and leisure, which designate a campsite and the golf course. Ski pistes and cross-country trails were adapted to the protected areas, whereby an enlargement of the trails was abandoned. Snow-making equipment and transport facilities are inscribed in the maps as well, but changes and enlargements would require zones with special planning regulations for which detailed restrictions had to be worked out. The zones of protection mostly correspond to the protected areas introduced in the section about nature conservation. This means that the superior legislation was correctly implemented on the communal level in this case. Additionally, Grindelwald defined game sanctuaries and communal mire landscapes.

Table 1: Zones as defined in Grindelwald's protection regulations.

Use zones	Protection zones	Natural objects	Cultural objects
Agriculture	Landscape of national importance (BLN)	Single trees	Characteristic buildings
Public use	Cantonal protected areas	Hedges	Historic traffic routes
Ski pistes	Cantonal protected botanical areas	Fenlands (national, cantonal and communal)	Cultural heritages
Cross-country trails	Alluvial zones of national importance	Hay meadows and pastures (regional and communal)	
Snow-making equipment and transport facilities	Zones of protected springs	Waterbodies	
Sports and leisure	Mire landscapes (national and communal)	Amphibian spawning areas of national importance	
Landfill sites	Cantonal bird zones	Outstanding forests	
Zones with special planning regulations	Federal hunting reserves		
	Communal game sanctuaries		
	Bank protection		
	Cultural landscape with characteristic buildings		

The cultural landscapes zones with characteristic buildings may be interpreted as a pioneering work. This is a coordinated approach by cantonal, regional and communal authorities to resolve the problem of maintenance of characteristic agricultural landscapes. In 1995 the region of Oberland-Ost inventoried all characteristic buildings of seasonal settlements for which maintenance is no longer guaranteed. Furthermore, the canton defined the areas of alpine temporary settlements where the communes are allowed to designate such specific cultural landscapes (see 2.4). In these zones the purpose of characteristic buildings may be changed. For example, former stables may be

used as holiday flats in order to preserve the aesthetic view of the traditional landscape, whereby the fronts have to be preserved in traditional style. Also, the several types of natural objects serve to conserve cultural landscapes. In this sense scattered single sycamores are protected as a typical characteristic of montane landscapes.

With a protection plan and regulation in this form, Grindelwald has an effective tool to manage different interests and claims. The interviewed representative pointed out that by means of this tool it was and is possible to control conflicts. Recently the commune was able to enforce the planning of a new rope course in a zone of public use down in the valley where a car park and a place for special events are already situated. The operator preferred an area close to a cable car station and a game sanctuary. Even the cantonal authorities supported the higher location. Generally, collaboration with the regional authority is appreciated, although it depends on the subject. While the first regional landscape plan of the 1980s (see 2.1) was perceived as meddling from above, the recent regional land management concept is considered as a benefit. The fact is that the latter recommendations originated from communal proposals, while the former plan suggested the abandonment of projects to develop ski pistes on the eastern slopes of the Grosse Scheidegg. This area today belongs to the mire landscape of national importance.

Collaboration with tourism actors concerning planning activities seems to be more delicate. They were all invited to the working groups elaborating the protection plan but their attendance was sparse. However, the communal representative attested to their correct adherence to the agreements. Grindelwald chose a special proceeding in the late 1980s when the chair lift from the village up to First had to be renewed. To prevent an excessive extension of capacity, the commune prevailed upon interested international investors by absorbing the transport company and carrying out a moderate renewal. This was a crucial action because a considerable increase of people visiting the ski area would have presupposed further enlargements of the transport facilities upside. In some years the cable car to the other ski area Männlichen will have to be replaced as well. In this case capacity enhancement will not be so sensitive because of the area's huge extent which allows for distribution of tourists.

To bring together actors of tourism and agriculture seems to be a difficult endeavour. The commune appreciates the regional activities consisting of the “landscape award” (see 2.3) and the regional fund and the “landscape agent” (see 2.1). However, according to the representative, it is hardly possible to involve tourism actors in preserving nature. In fact the commune still is counting on local socio-cultural identity to facilitate agricultural practices. Shrub invasion is not a problem as in other places, and there is still enough grazing livestock on the alps (or highland summer pastures) due to a traditional system of alpine cooperatives (see Tiefenbach 2006). However, there is a tendency towards larger farms, which conflicts with the traditional structure. Subsidised liquid manure tanks in particular are displacing the traditional system of dried dung, and farmers are beginning to distribute the liquid manure higher up on the alps, degrading the rich biodiversity. Additionally, increasing direct payments for farmers have led to an image of civil servants which could depreciate agriculture in the long term.

Indeed, the commune has little scope to influence federal agricultural policy or tourism companies. Ultimately, the communal authority may influence the interests and activities of agricultural and tourism actors through spatial planning and financial incentives, mostly allocated by the canton or the confederation. Furthermore, interrelations between agriculture, landscape and tourism need to be highlighted regularly to keep them in people's minds. The protection plan and regulation of Grindelwald in this context seems to be a good solution.

3.2 Promoting tourism in the Lötschental

During the last centuries the Lötschental was a valley only accessible from the Valaisian main valley, passing a gorge often closed by avalanches or rock slides. Agriculture and forestry were the main economic sectors ensuring self-sufficiency and restricting external needs until the construction of the Berne-Lötschberg-Simplon international railway line contributed to a sudden improvement in accessibility in 1913. One effect, was the gradual emergence of summer tourism after the Second World War. A ski area was developed on the south slopes above Wiler in the early 1970s. Today the Lötschental is less well known than other famous Swiss destinations (such as the "Jungfrau Region") but it is a popular small recreation area easily reachable from several Swiss centres. However, a more important effect of the new accessibility was the increasing number of local people taking employment outside the valley. Thus agriculture has become less important. This tendency is shown by the numbers of employees and the population from 1950 to 2000 (Figure 8). Since 1980 the tertiary sector has exceeded the others, even though the development of several chemical industries in the Valaisian main valley during the second half of the 20th Century also brought in in-creasing numbers of industrial employees. It is remarkable that the population remains at the level of 1950, while commuter statistics show that in all four communes between 55 and around 70% of the inhabitants work outside of their domiciles (Aerni et al. 2007).

The main tourism actors in this valley are the local tourism organisation, "Lötschental Tourismus, "a representative of which was interviewed, and the company operating the transport facilities in the ski area. Since 2002 the two actors have been cooperating by sharing the administration agency. Measured by turnover, the transport business in winter is more significant (93%) because of the ski area, which was enlarged by the construction of a new cable car reaching up to the Hockengrat (3111 m) in 2003. Additionally, there are plans to connect the transport facilities with the Leukerbad health resort in the adjacent valley but the financing is not assured and there is no unanimous interpretation of whether environmental legislation would allow such a project. However, according to statistical data on overnight stays in hotels (no seasonal data are available for non-hotel accommodations), summer guests outnumber winter guests (Aerni et al. 2007). This fact affects the activities of the tourism organisation.

In the Valais, controlling, coordinating and managing tourism is a communal task which has been delegated by the four communes in the Lötschental to "Lötschental Tourismus". The communes did not define written duties, but they had to approve the statutes of the tourism organisation. Accordingly, "Lötschental Tourismus" is responsi-

ble for marketing activities, informing and serving guests, and collecting tourist taxes to finance services. In addition to these taxes, the association receives an annual amount from the communes. As a special form in Switzerland, "Lötschental Tourismus," together with the tourism organisations of Kandersteg and Reichenbach (two Bernese WHS communes on the other side of the Lötschenpass), has outsourced the marketing activities for sharing by the "Region Lötschberg" association.

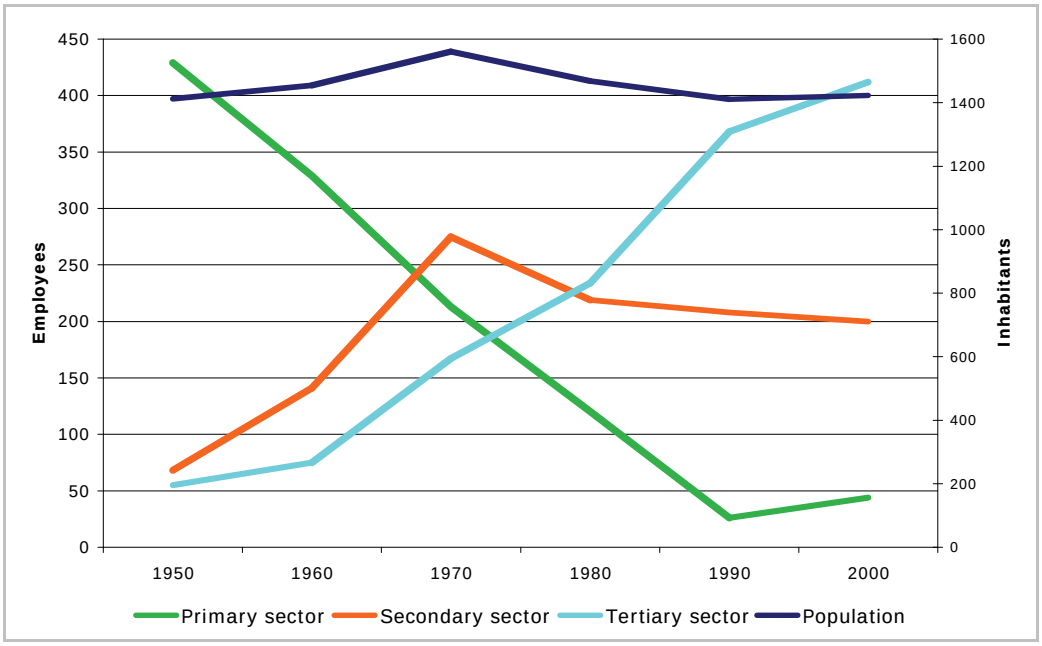


Figure 7: Economic structure and population of the four communes in the Lötschental (Ferden, Kippel, Wiler and Blatten). (Data source: Employees: Population census (1950–1980), SFSO 2005 (1990, 2000); Population: WHS Association 2005)

Thus the main activity of "Lötschental Tourismus" consists of creating attractive offers for tourists. Guided tours, a local museum, gastronomic specialties and several sports are offered on the seasonal agenda. The WHS is thereby perceived as an important facilitator with the aim of promoting the uniqueness of the region. For instance, a combined hiking package called "World Heritage Week" was created by several local hotels whereby tourists may discover the valley, including a guided tour (LT 2007).

Regarding interrelations between tourism, land management and land use, the representative assigned a significant portion to local agriculture in preserving nature and landscape. Even if there is little scope left for tourism actors to influence agricultural policies, there are several projects and ideas to support agriculture and maintenance of landscape in the Lötschental. The most effective activity is an annual collective working event for guests and locals when certain sections of the hiking trails are maintained. Another activity is cooperation among restaurants, hotels and local farmers for the sale and use of local agricultural products. "Tourismus Lötschental" and some farmers are also organising joint trade fairs that offer farm visitations in winter.

According to the representative, further enhancement of activities is hindered primarily by low appreciation for agricultural work in the valley. The value of agriculture has been diminished, presumably due to the high portion of local people working outside of

the valley in the secondary or tertiary sectors. In fact, the decline in the primary sector during the last fifty years has been enormous (see Figure 5). Moreover, only a minimal number of jobs in the secondary and tertiary sectors are linked to tourism, part-time employment of some farmers by the local transport company notwithstanding. Consequently, collective awareness of the landscape's significance for the local economy is disappearing. Breeding sheep is a common hobby in this area, but services for aesthetic landscapes are less popular. Some part-time farmers, asked by the communes for better maintenance of their meadows, threatened to abandon agricultural activities if there were additional required duties. In any case, some farmers took up full-time farming again some years ago, but it is not cost-efficient for all of them to keep livestock in summer on the local alps. Some cattle herds are transported outside of the valley during summer, while one local alp is under lease by an external farmer. Consequently, by contrast to Grindelwald, the alps in the Lötschental are underused.

A further problem concerning landscape aesthetics in the Lötschental is the considerable number of ruined stables scattered all over the valley. In collaboration with the University of Bonn, studies were done on the aesthetic claims of tourists and locals. While locals tend to regret the proposed demolition of unused stables because of existing memories, tourists prefer landscapes unaffected by ruined buildings. Therefore, according to the representative, it is not opportune to discuss demolitions. However, in one outstanding communal project, 24 buildings in a traditional "stable village" to the east of Blatten were renovated. This endeavour was financed by the Swiss fund for landscape (FLS) and the owners. Currently "Lötschental Tourismus" is offering guided tours of this "village," explaining the historic background and the significance of traditional landscapes. In general, maintenance of infrastructure is the responsibility of the communes, but there are also other foundations supporting renovation of traditional buildings in the villages.

Given the small scale of the area, it is difficult to distinguish the provenance of several projects and ideas as there are few innovative people, almost all of whom are largely engaged in the municipal councils, the tourism organisation, and other local associations at the same time. According to the representative, only about four or five persons are involved in this type of cooperation. Currently more effects are expected from a so-called Regio Plus project. This national programme supports regional initiatives meant to promote regional value added. Seven subprojects have been submitted, including theme trails in the glacier foreland and forests. On the other hand, more buildings should be renovated and rental of holiday flats should be coordinated in order to avoid a high number of vacant houses. Furthermore, a concept could be worked out to bake traditional rye bread together with tourists, as a traditional collective oven and a mill have been renovated. Furnishing cereals could be an additional opportunity for a farmer to be involved.

Thus the activities of "Lötschental Tourismus" seem to be congruent with the WHS management strategy and plan and with federal regional economic policies. As mentioned above, the tourism organisation promotes regional value added by means of exploiting sectoral interrelations between tourism, agriculture and local commerce.

However, the decreasing socio-cultural value of agriculture is a hindrance. Further conflicts could arise if the project of linking the ski area with the adjacent health resort were realised, but as long as the actors promote sustainable tourism, primarily in summer, their activities assist the goals of the WHS management strategy and plan. They may benefit all the more from the international WHS award highlighting their destination.

Figure 8: The upper part of the Lötschental. (Photo courtesy of JAB)

3.3 Comparison

As the two case studies showed, the organisations investigated have acted according to the WHS management strategy and plan. While the commune of Grindelwald coordinates conservation and development "undertaken in reasonable proportions," Lötschental Tourismus promotes a number of projects enhancing regional value added by means of a "high-quality, nature-oriented tourism," as achieved by the management strategy and plan (WHS Association 2005). Likewise, the importance of communal and local activities was validated but the existence of and the scope for planning tools were assessed as non-homogeneous. This fact is based on the delicate interrelations between tourism, land use and land management. In Grindelwald, where tourism is highly developed, planning regulations covering all interests and activities are crucial to keep a balance for the benefit of nature and landscape. However, in the Lötschental, a less well-known tourist destination, such broadly negotiated planning tools do not exist.

Rather the local tourist organisation makes offers and advertises attractions on the basis of the internationally known WHS label. This illustrates the potential contradiction between conservation and development, but at the level of tourism in this valley it has not yet endangered the ecological balance. In fact promotion of the WHS as a tourist attraction includes consideration of conservation goals virtually due to the two thirds of the area of the valley situated within the WHS perimeter. A more serious threat is posed by the socio-cultural valuation of agriculture. The Lötschental already seems to be more affected by this problem than Grindelwald. However, it is hardly possible to address this tendency only with local planning tools. Federal agricultural policy and societal and economic phenomena play essential roles, too.

Corresponding to the representatives' comments, the role of the WHS seems surprisingly clear to local actors. On the one hand the "Lötschental Tourismus" activities count on the WHS as an attraction. On the other hand, for protection planning in Grindelwald, the WHS is perceived as dispensable because of existing and legally binding protected areas - especially the high alpine zone of national importance. This fact leads to the conclusion that the WHS is perceived primarily as a tourist attraction while the protection goal is already ensured by the existing binding regulations.

With regard to planning activities, a further interesting fact concerning key players was revealed. In both cases just a few persons are keeping track of the projects. Although a great number of participants may be involved in planning processes, just a few persons have been concerned with them for a long time. Thus local planning activities basically seem to depend on the commitment of a few persons. This fact leads to difficulties when changes in personnel occur. However, in small-sized areas like the different valleys around the WHS, such phenomena are comprehensible and inevitable.

4 Conclusions

As the two preceding chapters have demonstrated, the WHS is embedded in a highly complex institutional framework. Responsibilities for the different sectors and activities of the WHS are shared by a multitude of administrative units. This segmentation produces impacts on coordination and cooperation practices. The results of the main study, comparing the objectives and measures of the WHS management strategy and plan and the existing governmental planning tools as well as the results of the two supplementary case studies, led to the conclusions below.

4.1 Complexity of responsibilities

In the Swiss institutional framework structured at three basic levels (the confederation, the cantons, and the communes), certain regularities in responsibility were discernible. From this it is possible to deduce the scope of the actors affected by the WHS to influence the development of different sectors.

- The primary sector is managed at superior levels. Agriculture is strictly controlled by the Swiss Confederation and is steered by the national parliament and its commissions. Due to hindering conditions, especially for mountain farmers, the national policy of subsidies has an essential impact on the region of the WHS but is hardly subject to influence by regional actors. A tendency towards more regional cooperation is observable in forestry and in planning linking agricultural and ecological needs for the benefit of cultural landscapes. These policies are mainly the responsibility of the cantons.
- Based on its functional character, infrastructure planning, like settlements, transports and energy, is organised according to the principle of subsidiarity. While infrastructure of national and cantonal interest is designated by superior levels of administration, small-scale facilities are arranged by the communes. Thus the rather peripheral region of the WHS is mostly affected by cantonal, regional and communal planning. Exceptions are the federal land use planning law restricting building activities in agricultural zones and the army operating an airport in Meiringen.
- The principle of subsidiarity also determines nature conservation. By contrast with infrastructure planning, federal protected areas cover almost the whole WHS area as well as several additional protected areas in the Bernese part of the WHS region. Their implementation depends on cantonal legislation because they are responsible for assuring legally binding restrictions. These restrictions ultimately have to be inscribed in communal zone use plans binding on landowners. Due to the Valaisian practices of delegating conservation tasks to the communal level, the communes in the southern part of the WHS are mostly responsible solely for conservation implementation, while on the Bernese side in the North conservation activities are coordinated by communal, regional and cantonal administrations.

- Tourism on the one hand is mainly influenced by the confederation and the cantons. However, they affect only conditions concerning regional development. On the other hand, tourism actors generally seem to be less integrated in planning processes. But as the case study of Grindelwald demonstrated, tourism actors may be affected by other planning dealing with conservation and land management. This means that regional and communal planning tools are also able to impact tourism. The transport facilities and the alpine airfields regulated by federal offices are special planning fields.

4.2 High congruence with the World Heritage Site management strategy and plan

The governmental planning tools for the WHS area and the region surrounding it are highly congruent with the objectives and measures of the WHS management strategy and plan, although there are several exceptions. Due to multiple congruent formulations and phrasings it may be assumed that the extensive participatory process preceding the elaboration of the WHS management strategy and plan facilitated an exchange of common planning discussions and ideas. Investigation of differences and synergies led to the following conclusions:

- The greatest congruence was found in the primary sector. Since 1999 federal agricultural policy has aimed at increasing use of environmental production methods. By means of direct payments the decline of the agricultural sector has been halted and the task of landscape conservation and maintenance has been compensated in mountain regions where topographic and climatic conditions are less profitable. Forestry and hunting regulations likewise correspond to the management strategy and plan. Only in ecological matters does the canton of Berne seem to enhance cooperation. As the “regional concepts of ecological integration” and the “regional forest plans” showed.
- Infrastructure planning also includes many objectives corresponding to the WHS management strategy and plan, such as optimising public transport and promoting renewable energy resources. An exception is the problems associated with the military airport in Meiringen, where on the one hand the federal army strategy is paramount and on the other hand the commune has to find a balance between economic benefits and the disadvantage of tourism represented by the noise of airplanes.
- Nature and environmental protection seems to be implemented more non-homogeneously. Basically, virtually the whole area inside the WHS perimeter is covered by at least one type of national or cantonal protected area. Outside the perimeter there are additional protected areas on the Bernese side. This difference is caused by different cantonal strategies. While the canton of Valais has delegated implementation almost completely to the communes, the canton of Berne has been more engaged in cantonal and regional conservation policy. Furthermore, not all WHS communes have zone use plans covering the whole communal area. Due to their character which makes them legally binding on

landowners, the zone use plans play a crucial role in conservation implementation.

- The least integrated actors in planning processes belong to the economic sector. Especially in tourism, as the most important sector in the WHS region, private actors bear responsibility for high-quality and sustainable activities. Thus congruence with the WHS management strategy and plan is recognisable insofar as the confederation and cantons are promoting regional value added and cooperation, while some regions try to link tourism and agriculture by land management efforts and shared product offers. The most potential conflicts with conservation goals may emerge in tourism. As the case studies showed, this potential depends on the quantity and strategy of tourism actors and has to be regulated by communal planning tools.

4.3 Functional coordination and cooperation

The complex institutional framework surrounding the WHS calls for intense coordination and cooperation activities and the framework poses a challenge for the WHS management. The governmental planning tools are structured mainly on functional principles. Thus the cantonal border primarily divides the planning activities in the region of the WHS and determines the orientation in opposite directions towards regional centres. Additionally the various valleys determine separated functional spaces wherein cooperation is facilitated, as the case study in the Lötschental demonstrated. In general the autonomy of the communes is important even if regional coordination and cooperation have been enhanced at a larger scale by federal regional development policy since the 1970s. In any case, the canton of Berne has also strengthened regional coordination in spatial planning in recent decades. Thus the Bernese communes on the northern side of the WHS seem to be more used to cooperation.

Based on the results of the case studies, the role of key players has to be assessed as important. Promotion of planning tools and regional activities depends on their commitment, and due to the complex framework the problem of heavy work loads is obvious. Hence the functionally oriented planning processes and the high number of administration units may conflict with WHS activities. Given the high congruence of objectives and measures mentioned above, this should not be a serious problem, but the emergence of a WHS ownership is hindered.

4.4 Enhancing World Heritage Site ownership

WHS ownership within the rather functionally oriented framework could be enhanced by means of continuous know-how exchange all over the WHS region. The interrelations between tourism, mountain agriculture and nature conservation affect all WHS communes in equal measure. The future development of the communes depends mainly on the balance between these sectors, as the case studies showed. Admittedly, it is not possible to completely regulate this balance by means of planning tools and regional cooperation owing to external factors such as socio-economic and cultural values related to agriculture. But as the WHS management strategy and plan emphasises, the

preservation of cultural landscapes in the region of the WHS is a crucial task and more important than the conservation of natural landscapes, which are less threatened. This fact was confirmed by analysis of the governmental planning tools whose regulations and restrictions also concern the areas outside the WHS perimeter where human activities are concentrated.

4.5 The role of the World Natural Heritage Site

Finally, the study revealed that the WHS is mentioned in just a few sections in the governmental planning tools. This fact, on the one hand, is presumably due to the peripheral area awarded by the World Heritage Committee. On the other hand, the major part of the tools analysed was elaborated before the inscription of the WHS in 2001. In any event, the few references to the WHS seem less important because of the high congruence between the objectives and measures of the WHS management strategy and plan and the planning tools. Likewise, in regional concepts, the WHS is mentioned more often, in what may be a sign of increasing regional significance.

A clearer picture was drawn by the representatives' valuations in the case studies. While the one interested in protection planning perceived the WHS as dispensable because of the already existing protected areas, the other representative interested in tourism counted on increasing international attractiveness. These valuations confirm the hypotheses discussed by Wiesmann & Liechti (2004), whereby the core function of World Natural Heritages in the North “is mainly to increase attractiveness and counterbalance processes of peripherisation.” Furthermore, the contribution of a WHS to sustainable regional development “is limited” and “only applicable as part of integrated regional development strategies.” This statement underlines the importance of regional coordination and accurate deliberation about protection and development goals. Thus, as the presented study showed, integration and reconciliation of all existing planning activities for the benefit of a sustainable WHS management is a highly complex undertaking.

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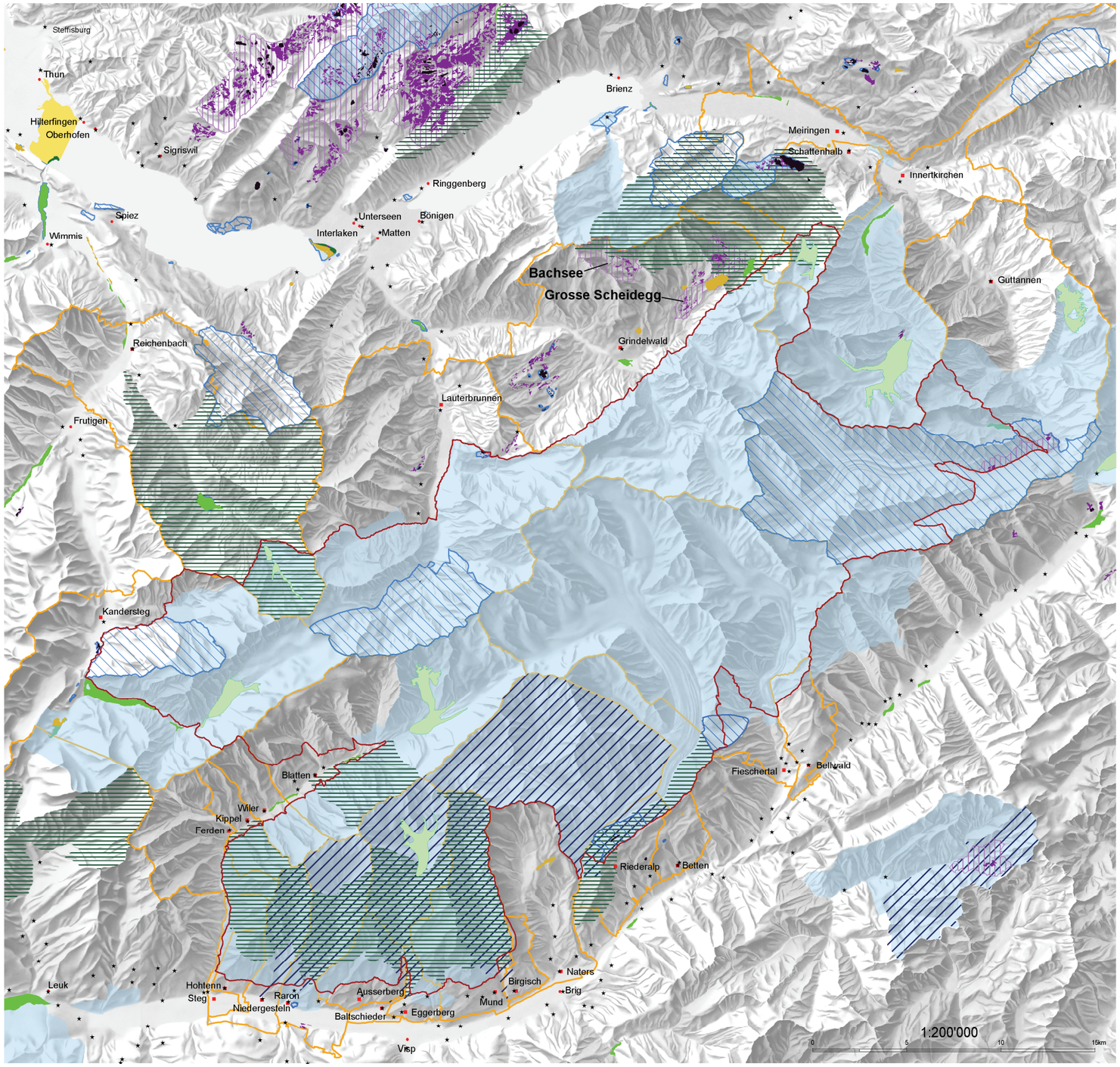

Overview of all National and Cantonal Nature Reserves

Legend

Landscape Protection

- Landscapes and natural monuments (BLN°)
- Ordinance concerning compensation for losses in hydropower generation (VAEW)
- Mire landscapes of particular beauty°
- Cantonal nature reserves (NSG)
- Swiss heritage sites (ISOS°)

Biotopes of National Importance

- Federal hunting reserve°
- Raised bogs or transitional mires°
- Fenlands°
- Glacier foreland (alluvial zone°)
- Alpine alluvial zones°
- Watercourses (alluvial zone°)
- Delta (alluvial zone°)
- Amphibian spawning areas° (permanent)
- Amphibian spawning areas° (migratory)
- Reserves for waterbirds and migratory birds°°

° Federal Inventory of National Importance
°° Federal Inventory of International and National Importance

Legend detail

- Centre of associated commune with land inside the perimeter
- Centre of coummune with more than 2,000 inhabitants
- Border of associated commune
- Perimeter of the World Heritage Site (including extension of 06.2007)

Sources of data:
National borders, lakes, commune borders: GG25 © 2002
Swiss Federal Office of Topography (DV002213)
Main centres in communes: SWISSNAMES © 2004
Swiss Federal Office of Topography (DV012687)
Perimeter of the World Heritage Site 2005
Swiss Agency for the Environment, Forests and Landscape
Relief: PK100 © 1998 and PK500 © 1999
Swiss Federal Office of Topography (DV 351.4)
BLN, 2001, FOS GEOSTAT/SAEFL
Inventory of Mire Landscapes, 2004,
FOS GEOSTAT/SAEFL
Areas covered by VAEW, 2004, SAEFL
ISOS, 1994, SAEFL
NSG, 2004, Canton of Bern
NSG, 2005, Canton of Valais
Raised bog Inventory, 2003, FOS GEOSTAT/SAEFL
Fenland Inventory, 2004, FOS GEOSTAT/SAEFL
Alluvial Zone Inventory, 2003, FOS GEOSTAT/SAEFL
Amphibian Inventory, 2003, FOS GEOSTAT/SAEFL
Reserves for Waterbirds and Migrants, 2001, FOS GEOSTAT/SAEFL
Hunting Reserves, 2004, FOS GEOSTAT/SAEFL

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CDE (Centre for Development and Environment), Institute of Geography, University of Berne,
in cooperation with the Jungfrau-Aletsch-Bietschhorn World Heritage Site Association, Interlaken and Naters, 09.2007

Figure 4: The national and cantonal protected areas in the region of the World Heritage Site. (Source: WHS Association 2005; Wallner et al. 2007)

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In 2001 the Jungfrau-Aletsch-Bietschhorn region was inscribed on the World Heritage List of the UNESCO World Heritage Committee as the first World Natural Heritage Site in the Swiss Alps (now called the Swiss Alps Jungfrau-Aletsch World Heritage Site). This paper examines governmental planning tools and structures concerned with the WHS management strategy. The study is based on qualitative methods. A system of categories was developed, corresponding to the different objectives and measures of the management strategy; these constituted the basis for examining a large quantity of planning documents by means of content analysis. Two case studies are also included. Both synergies and differences are elaborated in order to evaluate the impact of the WHS on the region, including regional cooperation between various actors in a complex institutional framework.

The paper concludes that the governmental planning tools for the WHS area and the region surrounding it are highly congruent with the objectives and measures of the WHS management strategy and plan, with some exceptions. The results of the case studies demonstrated the importance of the role of key players at the federal, cantonal and communal levels. The preservation of cultural landscapes in the region of the WHS is a crucial and more important task than the conservation of natural landscapes, which are less threatened. As the contribution of a WHS to sustainable regional development is limited and only applicable as part of integrated regional development strategies, regional coordination and accurate deliberation about protection and development goals are important.

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